

CLAIMS

1. A flying head type optical head apparatus,
comprising:
 - 5 a fixed arm;
 - a suspension, an end of which is fixed to
said fixed arm and the other end is a free end;
 - a slider attached to the free end of said
suspension;
 - 10 an object lens mounted on said slider;
 - an optical means fixed to said fixed arm and
having a light source and a light receiving system;
 - a collimator lens positioned between said
light source and said object lens along an optical axis
 - 15 connecting said light source and said object lens, for
converging a light from said light source to make it
enter said object lens, converging a returned-back light
from said object lens to make it enter said light source;
and
 - 20 a first collimator lens moving means for
moving said collimator lens along said optical axis
between said light source and said object lens;
 wherein the slider mounted with said object
lens, attached to the free end of said suspension floats
25 due to a wind pressure of a rotary body rotating at a

position facing to said object lens.

2. An optical head apparatus as set forth in
claim 1, wherein said collimeter lens is positioned so
that a focal position thereof positions approximately at
5 a light emission point of said light source, and an
incident iris of said object lens positions at a focal
position when assuming that a parallel light enters from
the light source to said collimeter lens.

3. An optical head apparatus as set forth in
10 claim 2, wherein a distance between said collimeter lens
and the light emission point of said light source is
approximately equal to a distance between said collimeter
lens and the incident iris of said object lens.

4. An optical head apparatus as set forth in
15 claim 1, wherein said first collimeter lens moving means
is an electromagnet.

5. An optical head apparatus as set forth in
claim 1, wherein said first collimeter lens moving means
is a Piezo-effect element.

20 6. An optical head apparatus as set forth in
claim 1, wherein said rotary body is a rotary optical
recording medium.

7. An optical head apparatus as set forth in
claim 1, further comprises a second collimeter lens
25 moving means for substantially moving said collimeter

lens in the direction perpendicular to said optical axis.

8. An optical head apparatus as set forth in
claim 7, wherein said second collimator lens moving means
is an electromagnet.

5 9. An optical head apparatus as set forth in
claim 7, wherein said second collimator lens moving means
is a Piezo-effect element.

10. An optical head apparatus as set forth in
claim 7, wherein said rotary body is a rotary magneto-
10 optical recording medium.

11. An optical head apparatus as set forth in
claim 1, wherein

15 said optical means fixed to said fixed arm
emits a light from said light source along a surface of
said arm; and

said fixed arm is provided with a mirror for
directing the light emitted from said optical means to
said collimator lens.

12. An optical head apparatus as set forth in
20 claim 11, wherein

said optical means fixed to said fixed arm
emits a light from said light source along a surface of
said fixed arm; and

25 said fixed arm has a mirror for directing the
light emitted from said optical means to said collimator

lens and a mirror rotation means for rotating the mirror for making the light emitted from said optical means enter said collimator lens by being shifted from said optical axis.

5 13. An optical head apparatus as set forth in claim 12, wherein said mirror rotation means is an electromagnet.

10 14. An optical head apparatus as set forth in claim 12, wherein said mirror rotation means is a Piezo-effect element.

15 15. An optical head apparatus as set forth in claim 1, wherein said object lens is configured by combining two converging lenses provided close to the slider and used for a near field recording operation.

15 16. An optical recording/reproducing apparatus, comprising:

 a rotary driving means for a rotary recording medium for optically or magneto-optically recording and/or recording/reading data;

20 a flying head type optical head apparatus comprising a fixed arm; a suspension, an end of which is fixed to said fixed arm and the other end is a free end; a slider attached to the free end of said suspension; an object lens mounted on said slider; an optical means
25 fixed to said fixed arm and having a light source and a

light receiving system; a collimator lens positioned between said light source and said object lens along an optical axis connecting said light source and said object lens, for converging a light from said light source to
5 make it enter said object lens; and a first collimator lens moving means for moving said collimator lens along said optical axis between said light source and said object lens; wherein the slider mounted with said object lens, attached to the free end of said suspension floats
10 due to a wind pressure caused by rotation of said rotary recording medium rotating at a position facing to said object lens; and

a control apparatus for performing tracking control on said optical head apparatus, comprising a
15 collimator lens position control means for controlling a position of said collimator lens by driving said first collimator lens moving means based on a focus error signal.

17. An optical recording/reproducing apparatus as
20 set forth in claim 16, wherein said collimator lens is positioned so that a focal position thereof positions approximately at a light emission point of said light source, and an incident iris of said object lens positions at a focal position when assuming that a
25 parallel light enters from the light source to said

collimator lens.

18. An optical recording/reproducing apparatus as set forth in claim 17, wherein a distance between said collimator lens and the light emission point of said 5 light source is approximately equal to a distance between said collimator lens and the incident iris of said object lens.

19. An optical recording/reproducing apparatus as
set forth in claim 16, wherein

10 said optical head apparatus further comprises
a second collimator lens moving means for substantially
moving said collimator lens in the direction
perpendicular to said optical axis; and

 said control apparatus further comprises a
15 tracking sub servo control means for controlling a
position of said collimator lens to the track direction
of said rotary recording medium by driving said second
collimator lens moving means based on a tracking error
signal.

20. An optical recording/reproducing apparatus as
set forth in claim 16, wherein

 said rotary recording medium has one or a
plurality of recording surfaces; and

 said collimator lens position control means
25 of said control means drives said first collimator lens

moving means to adjust a position of said collimator lens
so that a light from said light source is focused on one
recording surface subjected to recording or reproducing
of data through said object lens among one or a plurality
5 of recording surfaces of said rotary recording medium.